

SECTION III—REMARKS

This amendment is submitted in response to the final Office Action mailed July 13, 2005. Claims 1, 9 and 19 are amended herein, and claims 1-26 remain pending in the application. Applicants respectfully request reconsideration of the application and allowance of all pending claims in view of the above amendments and the following remarks.

Rejections Under 35 U.S.C. § 102

The Examiner rejected claims 1-5, 9-12, 14-16, 19-22, and 24-26 as anticipated under 35 U.S.C. § 102(e) by U.S. Patent Application Publication No. 2004/018599 to Chason *et al.* ("Chason"). Applicants respectfully traverse the Examiner's rejections. A claim is anticipated only if each and every element, as set forth in the claim, is found in a single prior-art reference. MPEP § 2131; *Verdegaal Bros. v. Union Oil of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). As explained below, Chason cannot anticipate these claims because it does not disclose every element and limitation recited therein.

Claim 1, as amended, recites an apparatus combination including an optical die flip-chip bonded to a substrate and defining a volume between the optical die and the substrate, the optical die including an optically active area on a surface of the die facing the substrate, "an optically transparent underfill material occupying at least those portions of the volume substantially corresponding with the optical path of the optically active area," and an opaque underfill material occupying portions of the volume not occupied by the optically transparent underfill material. Chason, in Figure 2, discloses that the volume between the substrate 230 and the flip chip 210 is filled with an underfill material 240, except in the region between optical devices 234 and 264. The region between the optical

devices 234 and 264 contains only air. The Examiner argues that the air between devices 234 and 264 is an optically transparent underfill material, and that Chason therefore anticipates the claim.

Applicants respectfully disagree. Air cannot be considered an underfill material. Chason makes clear that the purpose of its apparatus is to keep the optical path between optical devices free from any underfill material. See paragraph [0007]. This is accomplished by inserting underfill material only in the non-optical portions of the flip chip 210. See paragraph [0028]. Chason is thus defined by the *absence* of any underfill material whatsoever between the optical devices 234 and 264, rather than by the presence of an optically transparent underfill. As a result, Chason cannot disclose, teach or suggest a combination including "an optically transparent underfill material occupying at least those portions of the volume substantially corresponding with the optical path of the optically active area" and "an opaque underfill material occupying portions of the volume not occupied by the optically transparent material." Applicants submit that Chason therefore cannot anticipate this claim, and respectfully request withdrawal of the rejection and allowance of the claim.

Regarding claims 2-5, if an independent claim is allowable, then any claim depending therefrom is also allowable. *See generally* MPEP § 2143.03; *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). As discussed above, claim 1, as amended, is in condition for allowance. Applicants respectfully submit that claims 2-5 are therefore allowable by virtue of their dependence on an allowable independent claim, as well as by virtue of the features recited therein. Applicants therefore respectfully request withdrawal of the rejections and allowance of these claims.

Claim 9, as amended, recites an apparatus combination including an optical die flip-chip bonded to a substrate and defining a volume between the optical die and the substrate, the optical die including an optically active area on a surface of the die facing the substrate; an optical component partially positioned in the volume between the optical die and the substrate to carry an optical signal to or receive an optical signal from the optically active area; "an optically transparent underfill material occupying those portions of the volume substantially in the optical path of the optically active area"; and an opaque underfill material occupying portions of the volume not occupied by the optically transparent underfill material and the optical component. By analogy to the discussion above for claim 1, Applicants submit that Chason does not disclose, teach or suggest a combination including "an optically transparent underfill material occupying those portions of the volume substantially in the optical path of the optically active area" and "an opaque underfill material occupying portions of the volume not occupied by the optically transparent underfill material and the optical component." Applicants submit that Chason therefore cannot anticipate this claim, and respectfully request withdrawal of the rejection and allowance of the claim.

Regarding claims 10-12 and 14-16, if an independent claim is allowable, then any claim depending therefrom is also allowable. *See generally* MPEP § 2143.03; *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). As discussed above, claim 9, as amended, is in condition for allowance. Applicants respectfully submit that claims 10-12 and 14-16 are therefore allowable by virtue of their dependence on an allowable independent claim, as well as by virtue of the features recited therein. Applicants therefore respectfully request withdrawal of the rejections and allowance of these claims.

Claim 19, as amended, recites a system combination including first and second optical dies, each optical die being flip-chip bonded to a substrate and defining a volume between the optical die and the substrate, and each optical die including an optically active area on a surface of the die facing the substrate, an optical component extending between the first and second optical dies, the optical component partially positioned in the first and second volumes, "an optically transparent underfill material occupying those portions of the first and second volumes substantially in the optical paths of the optically active areas," and an opaque underfill material positioned in the first and second volumes, the opaque underfill material occupying portions of the volumes not occupied by the optically transparent underfill material. By analogy to the discussion above for claim 1, Applicants submit that Chason does not disclose, teach or suggest a combination including "an optically transparent underfill material occupying those portions of the first and second volumes substantially in the optical paths of the optically active areas" and "an opaque underfill material positioned in the first and second volumes, the opaque underfill material occupying portions of the volumes not occupied by the optically transparent underfill material." Applicants submit that Chason therefore cannot anticipate this claim, and respectfully request withdrawal of the rejection and allowance of the claim.

Regarding claims 20-22 and 24-26, if an independent claim is allowable, then any claim depending therefrom is also allowable. *See generally* MPEP § 2143.03; *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). As discussed above, claim 19, as amended, is in condition for allowance. Applicants respectfully submit that claims 20-22 and 24-26 are therefore allowable by virtue of their dependence on an allowable independent claim, as well as by

virtue of the features recited therein. Applicants therefore respectfully request withdrawal of the rejections and allowance of these claims.

Rejections Under 35 U.S.C. § 103

The Examiner rejected claims 6, 13 and 23 under 35 U.S.C § 103(a) as obvious in view of, and therefore unpatentable over, Chason. Applicants respectfully traverse the Examiner's rejection. If an independent claim is non-obvious under 35 U.S.C. § 103, then any claim depending therefrom is also non-obvious. MPEP § 2143.03; *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). As discussed above, claims 1, 9 and 19 are in condition for allowance. Applicants submit that claims 6, 13 and 23 are therefore allowable by virtue of their dependence on allowable independent claims, as well as by virtue of the features recited therein. Applicants respectfully request withdrawal of the rejections and allowance of these claims.

Conclusion

Given the above amendments and accompanying remarks, all claims pending in the application are in condition for allowance. If the undersigned attorney has overlooked a teaching in any of the cited references that is relevant to allowance of the claims, the Examiner is requested to specifically point out where such teaching may be found. Further, if there are any informalities or questions that can be addressed via telephone, the Examiner is encouraged to contact the undersigned attorney at (206) 292-8600.


Charge Deposit Account

Please charge our Deposit Account No. 02-2666 for any additional fee(s) that may be due in this matter, and please credit the same deposit account for any overpayment.

Respectfully submitted,

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Date: 9-13-05


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Enclosures: Fax transmittal
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